Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A method for calibrating a plethysmographic measurement system, the method comprising:

(a) measuring the combined volume of a plethysmographic measurement chamber and a known calibration volume coupled to said chamber by an opening to obtain a baseline volume measurement;

(b) sealing off said known volume from said chamber with an electronically controlled valve coupled to said opening;

(c) measuring the volume of said measurement chamber sealed off from said reference volume to obtain a comparison volume measurement;

(d) calibrating the plethysmographic measurement system based on the known calibration volume and a comparison of said baseline volume measurement and said comparison volume measurement.

2. (original) The method of claim 1, wherein the calibration volume is a calibration volume chamber with a known volume.

3. (original) The method of claim 1 wherein sealing off the reference volume further comprises:

sending an electrical signal to an actuation assembly coupled to said electronically controlled valve, wherein said actuation assembly moves a shaft coupled between said assembly and said valve to close said valve against said opening.

4. (original) The method of claim 3, wherein the actuation assembly further comprises:

a cam;

a follower coupled between said cam and said shaft wherein rotation of the cam moves said shaft, and wherein movement of said shaft either opens or closes said valve.

5. (original) The method of claim 3, wherein the actuation assembly further comprises:

a solenoid including a plunger, wherein said plunger is coupled to said shaft, and wherein movement of said plunger either opens or closes said valve.

6. (original) The method of claim 2, wherein the actuation assembly further comprises:

a pneumatic system coupled to said shaft, wherein activation of the pneumatic system opens and closes said valve.

7. (original) The method of claim 3, wherein said shaft is coupled to said valve by a pivotal joint.

8. (original) The method of claim 1, wherein steps (a)-(d) occur without intervention of a medical technician conducting a plethysmographic measurement using said measurement system.

9. (original) The method of claim 8, wherein steps (a)-(d) are conducted transparently to said medical technician.

10. (original) The method of claim 1, further comprising:

conducting a plethysmographic measurement of a test subject prior to measuring the combined volume of the plethysmographic measurement chamber and the known calibration volume coupled to said chamber to obtain a baseline volume measurement, and wherein calibrating the plethysmographic measurement system based on the known calibration volume and a comparison of said baseline volume measurement and said comparison volume measurement further comprises:

adjusting a result of the plethysmographic measurement of the test subject based on said calibration of the measurement system.

11. (original) The method of claim 1, further comprising:

conducting a plethysmographic measurement of a test subject after calibration of the system.

12. (original) A method for calibrating a plethysmographic measurement system, the method comprising:

(a) measuring the volume of a plethysmographic measurement chamber to obtain a baseline volume measurement, wherein an opening coupling said measurement chamber to a known calibrated volume has been sealed with an electronically controlled valve;

(b) unsealing the opening coupling said known volume to said measurement chamber with said electronically controlled valve;

(c) measuring the combined volume of the measurement chamber and the known calibration volume coupled to said chamber by said opening to obtain a comparison volume measurement;

(d) calibrating the plethysmographic measurement system based on the known calibration volume and a comparison of said

baseline volume measurement and said comparison volume measurement.

13. (original) The method of claim 12, further comprising:

conducting a plethysmographic measurement of a test subject prior to measuring the combined volume of the plethysmographic measurement chamber and the known calibration volume coupled to said chamber to obtain a baseline volume measurement, wherein calibrating the plethysmographic measurement system based on the known calibration volume and a comparison of said baseline volume measurement and said comparison volume measurement further comprises:

adjusting a result of the plethysmographic measurement of the test subject based on said calibration of the measurement system.

14. (original) The method of claim 12, further comprising:

conducting a plethysmographic measurement of a test subject after calibration of the system.

15. (original) The method of claim 12, wherein the calibration volume is a calibration volume chamber with a known volume.

16. (original) The method of claim 12, wherein unsealing the opening coupling said known volume to said measurement chamber further comprises:

sending an electrical signal to an actuation assembly coupled to said electronically controlled valve, wherein said

actuation assembly moves a shaft coupled between said assembly and said valve to open said valve.

17. (original) The method of claim 16, wherein the actuation assembly further comprises:

a cam;

a follower coupled between said cam and said shaft wherein rotation of the cam moves said shaft, and wherein movement of said shaft either opens or closes said valve.

18. (original) The method of claim 16, wherein the actuation assembly further comprises:

a solenoid including a plunger, wherein said plunger is coupled to said shaft, and wherein movement of said plunger either opens or closes said valve.

19. (original) The method of claim 16, wherein the actuation assembly further comprises:

a pneumatic system coupled to said shaft, wherein activation of the pneumatic system opens and closes said valve.

20. (original) The method of claim 14, wherein said shaft is coupled to said valve by a pivotal joint.

21. (original) The method of claim 12, wherein steps (a)-(d) occur without intervention of a medical technician conducting a plethysmographic measurement using said measurement system.

22. (original) The method of claim 21, wherein steps (a)-(d) are conducted transparently to said medical technician.

23. (original) A calibration system for calibrating a plethysmographic measurement system, the calibration system comprising:

a computer;

a calibration volume chamber of known volume, including an opening coupling said calibration volume chamber to a plethysmographic measurement chamber;

an electronically controlled valve responsive to said signals from said computer, for sealing and unsealing said opening;

wherein said computer initializes a calibration sequence prior to conducting a plethysmographic measurement of a test subject.

24. (original) The calibration system of claim 23, wherein the volume chamber has a fixed volume.

25. (original) The calibration system of claim 23, wherein the electronically controlled valve further comprises:

a valve actuation assembly; and

a valve coupled to said actuation assembly.

26. (original) The calibration system of claim 23, wherein said valve is coupled to said valve actuation assembly by a shaft.

27. (original) The calibration system of claim 26, wherein said valve is coupled to said shaft by a pivotal joint.

28. (original) The calibration system of claim 23, wherein the valve further includes a seal about the circumference of said valve.

29. (original) The calibration system of claim 25, wherein the valve actuation assembly further comprises:

a cam;

a follower coupled to said cam;

wherein rotation of said cam causes said valve to open or close.

30. (original) The system of claim 29, further comprising:

a shaft, coupled between said follower and said valve, and wherein rotation of said cam causes said shaft to move, opening and closing said valve.

31. (original) The system of claim 30, further comprising:

an extension spring, mounted about said shaft, that applies a force to said follower to ensure contact between said follower and said shaft.

32. (original) The calibration system of claim 20, wherein motion of the shaft away from said cam causes said valve to open.

33. (original) The calibration system of claim 30, wherein motion of the shaft towards said cam causes said valve to open.

34. (original) The calibration system of claim 29, wherein the cam is rotated by a motor.

35. (original) The calibration system of claim 34, wherein the motor is responsive to signals from said computer.

36. (original) The calibration system of claim 25, wherein the valve actuation assembly further comprises:

a solenoid, including a plunger, wherein said plunger is coupled to said valve, and wherein motion of said plunger causes said valve to open or close.

37. (original) The calibration system of claim 36, wherein plunger extends or retracts in response to signals from said computer.

38. (original) The calibration system of claim 36, further comprising:

a shaft, coupled between said solenoid plunger and said valve, and wherein said shaft moves in response to the extension or retraction of said plunger.

39. (original) The calibration system of claim 38, wherein motion of said shaft causes said valve to open or close.

40. (original) The calibration system of claim 39, wherein extension of said plunger causes said valve to open.

41. (original) The calibration system of claim 40, wherein extension of said plunger causes said shaft to close.

42. (currently amended) The calibration system of claim ~~42~~ 41, wherein the valve actuation assembly further comprises:

a pneumatic device wherein the action of said pneumatic device causes said valve to open or close.

43. (original) The calibration system of claim 25, wherein the pneumatic device is coupled to a shaft, and wherein the action of said pneumatic device generates motion in said shaft, causing said valve to open or close.

44. (original) The calibration system of claim 25, wherein the actuation assembly comprises:

a rotary motor;

a ball screw coupled to said rotary motor;

wherein the operation of the motor causes said valve to open or close.

45. (original) The calibration system of claim 44, further comprising:

a shaft, coupled between said ball screw and said valve, wherein operation of the motor generates motion in said shaft, causing said valve to open or close.

46. (original) The calibration system of claim 24, wherein the calibration volume chamber is housed within said plethysmographic measurement chamber.

47. (original) The calibration system of claim 24, wherein the calibration volume chamber is mounted on the outside of said plethysmographic measurement chamber.

48. (original) The calibration system of claim 24, further comprising:

a manifold, coupled between said calibration volume chamber and said plethysmographic measurement chamber.

49. (original) The calibration system of claim 23, wherein said calibration sequence is conducted without interaction by a medical technician.

50. (original) A plethysmographic measurement system for conducting body composition measurements, comprising:

a plethysmographic measurement chamber;

measurement components, for measuring the volume of said test subject;

a calibration volume chamber, coupled to said measurement chamber by an opening;

an electronically controlled valve for sealing and unsealing said opening;

a computer for operating said measurement system;

wherein said computer initiates and runs a calibration sequence using said calibration volume and said valve, without intervention by a medical technician.

51. (original) The measurement system of claim 50, wherein the calibration volume chamber is housed within the plethysmographic measurement chamber.

52. (original) The measurement system of claim 50, wherein the calibration volume chamber is mounted to the outside of said plethysmographic measurement chamber.

53. (original) The measurement system of claim 50, further comprising:

a valve actuation assembly for opening and closing said valve in response to a signal from said computer.

54. (original) The measurement system of claim 53, wherein the valve actuation assembly further comprises:

a cam;

a follower coupled between said cam; and said valve, wherein rotation of said cam causes said valve to open or close.

55. (original) The measurement system of claim 54, further comprising:

a shaft coupled between said follower and said valve, wherein said shaft moves in response to rotation of said cam, and wherein movement of said shaft causes said valve to open or close.

56. (original) The measurement system of claim 53, wherein the valve actuation assembly further comprises:

a solenoid, including a plunger, wherein said plunger is coupled to said valve, and wherein motion of said plunger causes said valve to open or close.

57. (original) The calibration system of claim 56, wherein plunger extends or retracts in response to signals from said computer.

58. (original) The calibration system of claim 56, further comprising:

a shaft, coupled between said solenoid plunger and said valve, and wherein said shaft moves in response to the extension or retraction of said plunger.

59. (original) The calibration system of claim 58, wherein motion of said shaft causes said valve to open or close.

60. (original) The calibration system of claim 53, wherein the valve actuation assembly further comprises:

a pneumatic device wherein the action of said pneumatic device causes said valve to open or close.

61. (original) The calibration system of claim 53, wherein the actuation assembly comprises:

a rotary motor;

a ball screw coupled to said rotary motor;

wherein the operation of the motor causes said valve to open or close.

62. (original) The calibration system of claim 61, further comprising:

a shaft, coupled between said ball screw and said valve, wherein operation of the motor generates motion in said shaft, causing said valve to open or close.